

*Nitrogen Metabolism.*—During the year a urine-collector was developed to enable complete collections of urine excreted by rams under natural grazing conditions. By this means it was possible to carry out exploratory work in regard to the various types and proportions of the nitrogenous excretory products. It is thought that an excessive nitrogen metabolism may exert some influence upon the reproductive function. The fractional analyses involved have presented many technical difficulties, but the preliminary period of perfecting technique is now past.

Complete nitrogen balances have been worked out for five experimental rams grazed on regularly top-dressed perennial rye-grass-white-clover pasture. These preliminary results indicate an abnormally high intake of crude protein as compared with the results of animal nutrition research workers elsewhere.

*New Experimental Groups.*—In January, thirty two-tooth rams were purchased to inaugurate a new comparative test of food and environment on fertility. Half of these sheep were Manawatu-bred and had been raised on high-class pastures, the remainder were obtained from the Wairarapa. Half of each lot were placed upon irrigated rye-grass-white-clover pasture, and in addition to this fresh grazing, received a small daily concentrate ration of peas and linseed nuts. The remainder were placed on hill-country grazing of second-class pasture and, owing to the dry conditions, were forced to range extensively for food and so lost considerable condition. When the breeding-season commenced towards the end of March it was found that of the rams grazing on the high-class pasture all the Manawatu-bred rams were, with one exception, fertile, while the Wairarapa-bred rams, with one exception, were sterile. On the hill-grazing the reverse was found to be the case. Only one of the Manawatu rams was fertile, while the majority of the Wairarapa rams were in breeding-condition. Evidence of similar experience obtained from stud-breeders strongly suggests that Romney rams may be much more susceptible to environmental changes than has been hitherto supposed. This aspect is receiving close attention, and every endeavour is being made to obtain further data.

#### SOIL SURVEY.

*Land Utilization Committee.*—Sir Theodore Rigg, Director, Cawthron Institute (Chairman); Mr. A. H. Cockayne, Director-General, Department of Agriculture; Mr. E. J. Fawcett, Assistant Director-General, Department of Agriculture; Mr. R. B. Tennent, Director, Fields Division, Department of Agriculture; Mr. R. P. Connell, Land Utilization Officer, Department of Agriculture; Professor W. Riddet, Massey Agricultural College; Mr. G. A. Pascoe, Industrial Adviser, Department of Industries and Commerce; Dr. L. I. Grange, Director, Soil Survey Division, Department of Scientific and Industrial Research; Mr. R. G. McMorran, Acting Assistant Under-Secretary, Lands and Survey Department; Mr. F. R. Callaghan, Chief Executive Officer, Plant Research Bureau, Department of Scientific and Industrial Research; Dr. I. W. Weston, Agricultural Economist, Canterbury Agricultural College; Mr. F. J. A. Brogan, Assistant Secretary, Department of Scientific and Industrial Research (Secretary).

#### REPORT BY DIRECTOR (DR. L. I. GRANGE).

During the year excellent progress has been made in the two major surveys each covering several thousand square miles—namely, (1) regional survey of North Auckland; (2) regional survey of Hawke's Bay Province.

Messrs. N. H. Taylor and C. F. Sutherland, who are in charge of the North Auckland survey, were absent from the district for several months on soil-erosion and facial-eczema investigations and on the writing of the bulletin on the soils of Waipa County. Good progress has, however, been made with the compilation of the soil map and data for the report on the soils of Whangarei County.

The report on the soils, pastures, and agriculture of Hawke's Bay arising from the land-utilization survey of that province is to be published in three bulletins dealing with Mid, Southern, and Northern Hawke's Bay respectively. Field-work on the soils of Mid-Hawke's Bay, which is in the charge of Messrs. I. J. Pohlen, H. S. Gibbs, and J. D. Raeside, has been completed and a description of soil types is being written. Two of the four maps of the mid district are in the press.

#### WAIKATO LOWLANDS.

A soil survey of the Waikato lowlands between Hamilton and Morrinsville and of the Kereone district has been initiated in order to provide data required for the facial-eczema investigation. Mr. Sutherland commenced mapping in June, and in September his place was taken by Mr. H. A. Hughes. This work, together with the accompanying soil chemistry studies, is described under "Facial Eczema" (see page 42).

#### FOXTON DISTRICT.

A survey was made by Mr. C. S. Harris of the soils on the north bank of the Manawatu River near Foxton to provide information on their suitability for growing *Phormium tenax*. The soils are of recent alluvial origin, and most types can be classed as groundwater soils, for in the winter months water lies at or close to the surface.

On the levee of the Manawatu, which extends back about 40 chains from the river, soils, which are called the Manawatu series, are principally sands and sandy silts, with silt loams and clay loams in the slight depressions. Farther back from the river are the Kerekere soils, consisting of 6 in. to 18 in. of dark-grey silt loam resting on hard grey-brown slightly peaty loam. Still farther away from the river and forming the northern margin of the alluvial soils is the Whirokino slightly peaty silt loam.